# C Programming
# Week-1

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# Platform

- Linux distributions or Cygwin on Windows
- You can install Netbeans on Ubuntu
- GCC Compiler for C programs
- You need to know basic Linux commands
- Compile
  - gcc –o Hello HelloWorld.c
- Run
  - ./Hello

# Hello World!

```
#include <stdio.h>

int main()
{
    printf("Hello World\n");
    return 0;
}
```

Processed by the preprocessor before the program is compiled
Standard Input/Output header

The program successfully completed

# Hello World!
# Reading Integer

```
#include <stdio.h>
int main(){
    int integer1, integer2;
    int sum;

    printf("Enter first integer: ");
    scanf("%d",&integer1);

    printf("Enter second integer: ");
    scanf("%d",&integer2);

    sum=integer1+integer2;
    printf("Result: %d",sum);

    return 0;
}
```

Variable definition must be top of the function

Read an integer

**d:** signed decimal integer
**f:** floating-point values
**c:** character
**s:** string

# Control Statements If and Switch

```c
#include <stdio.h>
int main(){
    int grade;

    printf("Enter grade: ");
    scanf("%d",&grade);

    if(grade>=90)
        printf("A\n");
    else if(grade>=80)
        printf("B\n");
    else if(grade>=50)
        printf("C\n");
    else
        printf("F");

    return 0;
}
```

```c
#include <stdio.h>
int main()
{
    float n1, n2;
    char c;
    printf("Enter two number: ");
    scanf("%f %f", &n1, &n2);
    getchar(); //Read Newline character from scanf
    printf("Enter operator: ");
    scanf("%c",&c);
     switch(c)    {
        case '+':
            printf("%.1lf + %.1lf = %.1lf",n1, n2, n1+n2);
            break;
        case '-':
            printf("%.1lf - %.1lf = %.1lf",n1, n2, n1-n2);
            break;
        case '*':
            printf("%.1lf * %.1lf = %.1lf",n1, n2, n1*n2);
            break;
        case '/':
            printf("%.1lf / %.1lf = %.1lf",n1, n2, n1/n2);
            break;
        // operator is doesn't match any case constant (+, -, *, /)
        default:
            printf("Invalid operator");
   }
    return 0;
}
```

# Loops
# While – do While

```
#include <stdio.h>
int main()
{
    int counter=0;

    while(counter<5){
        printf("%d\n",counter++);
    }
    return 0;
}
```

```
#include <stdio.h>
int main()
{
    int counter=6;

    do{
        printf("%d\n",counter++);
    }while(counter<5);
    return 0;
}
```

# Loops
# for

```
#include <stdio.h>
int main()
{
    int i;
    for(i=0;i<6;i+=2){
        printf("%d^2=%d\n",i,i*i);
    }
    return 0;
}
```

```
#include <stdio.h>
int main()
{
    int height=8;
    int i,j;
    for(i=0;i<height;i++){
        for(j=0;j<height-i;j++){
            printf("*");
        }
        printf("\n");
    }
    return 0;
}
```

# Functions
# Math Library

```
#include <stdio.h>
int main()
{
    printf("%-20s %.2f\n","sqrt(900):",sqrt(900.0));
    printf("%-20s %.4f\n","exp(1):",exp(1));
    printf("%-20s %.4f\n","log(e)- base:e:",log(2.718282));
    printf("%-20s %.2f\n","log10(100)- base:10:",log10(100));
    printf("%-20s %.2f\n","fabs(-5) absolute:",fabs(-5));
    printf("%-20s %.2f\n","ceil(-5.7) smallest integer but not less:",ceil(-5.7));
    printf("%-20s %.2f\n","floor(-5.7) largest integer but not greater:",floor(-5.7));

    return 0;
}
```

There are also many function such as pow, sin, cos, tan ...

# Functions Definition

Each program has consisted of a function called *main* that called standard library functions to accomplish its task.

```
#include <stdio.h>
int square(int y){
    return y*y;
}

int main()
{
    int number = 5;
    printf("Square of %d is %d", number, square(5));
    return 0;
}
```

# Functions Definition

```
#include <stdio.h>
int square(int y){
    return y*y;
}

int main()
{
    int number = 5;
    printf("Square of %d is %d", number, square(5));
    return 0;
}
```

```
#include <stdio.h>
int square(int y);

int main()
{
    int number = 5;
    printf("Square of %d is %d", number, square(5));
    return 0;
}

int square(int y){
    return y*y;
}
```